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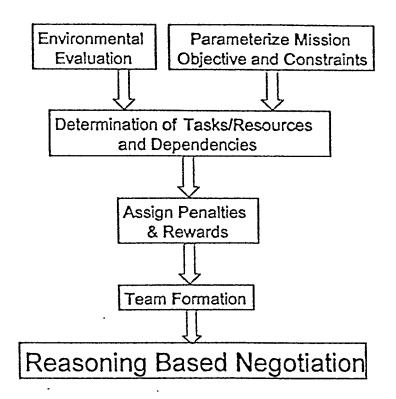
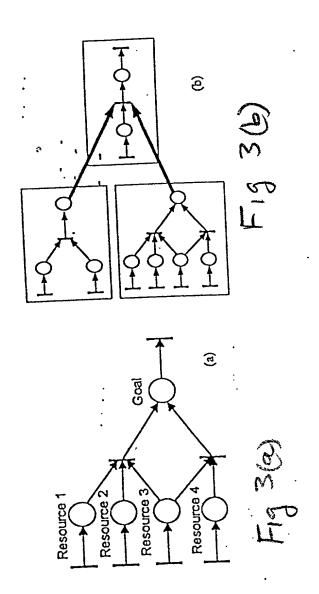
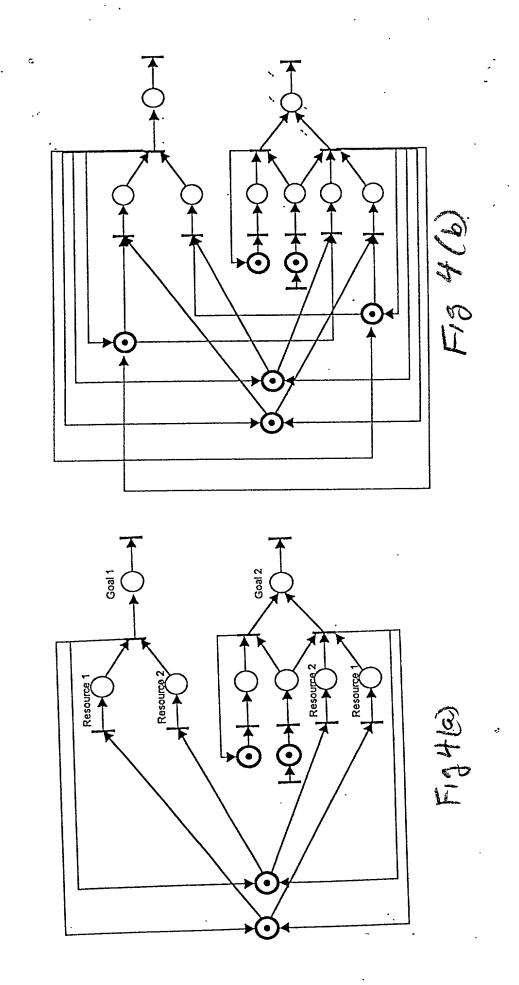


Fig 2





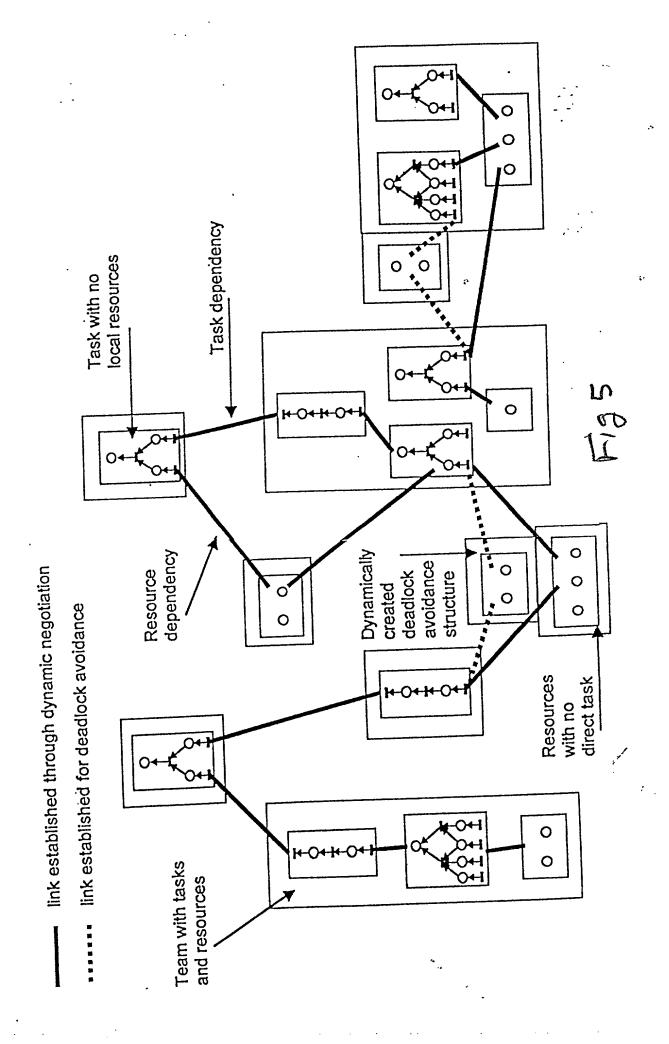


Fig. 6 Network of central authority and agent machines

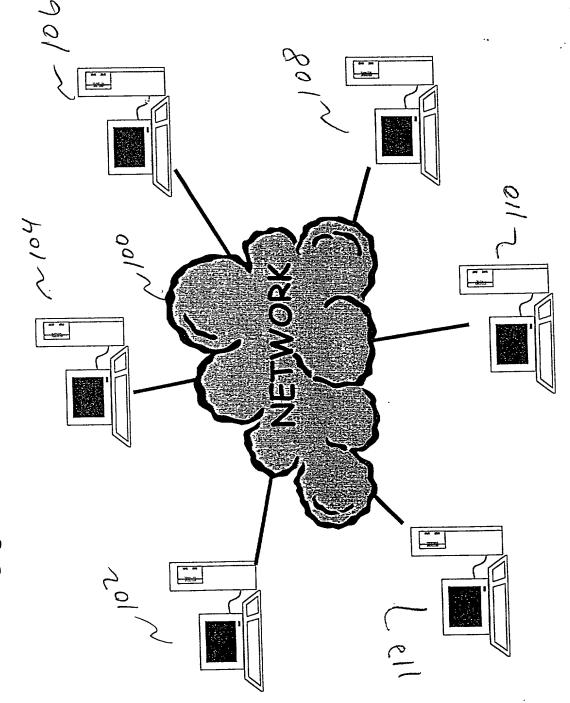
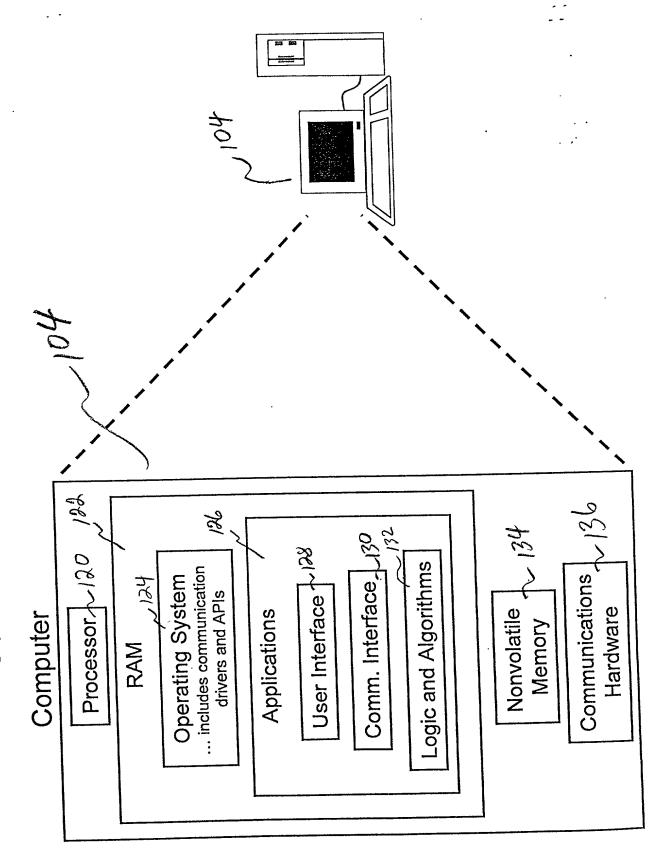
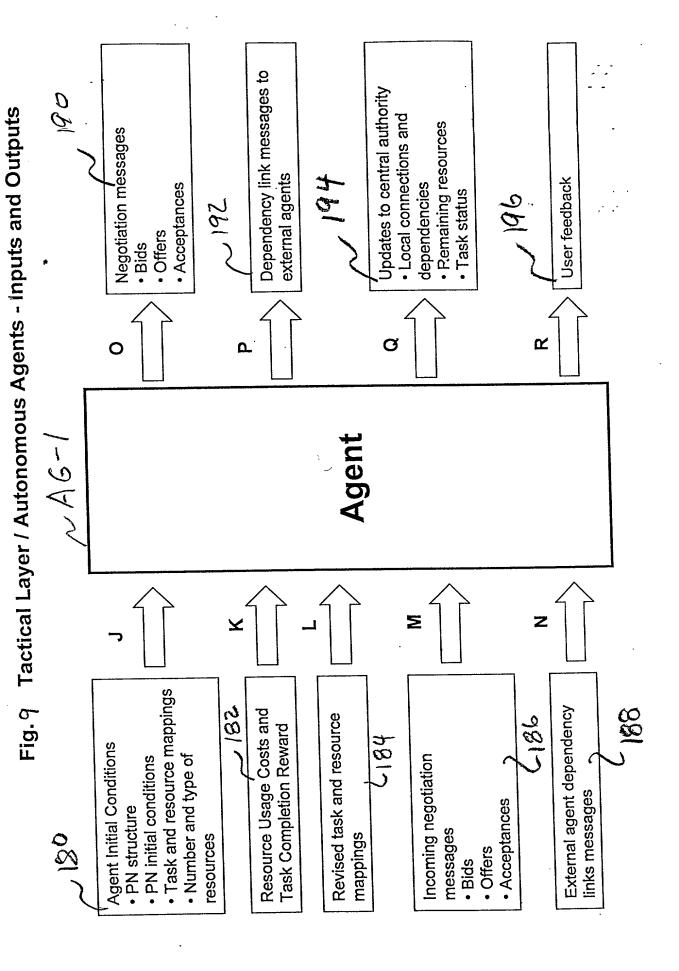


Fig. 7 Platform hardware



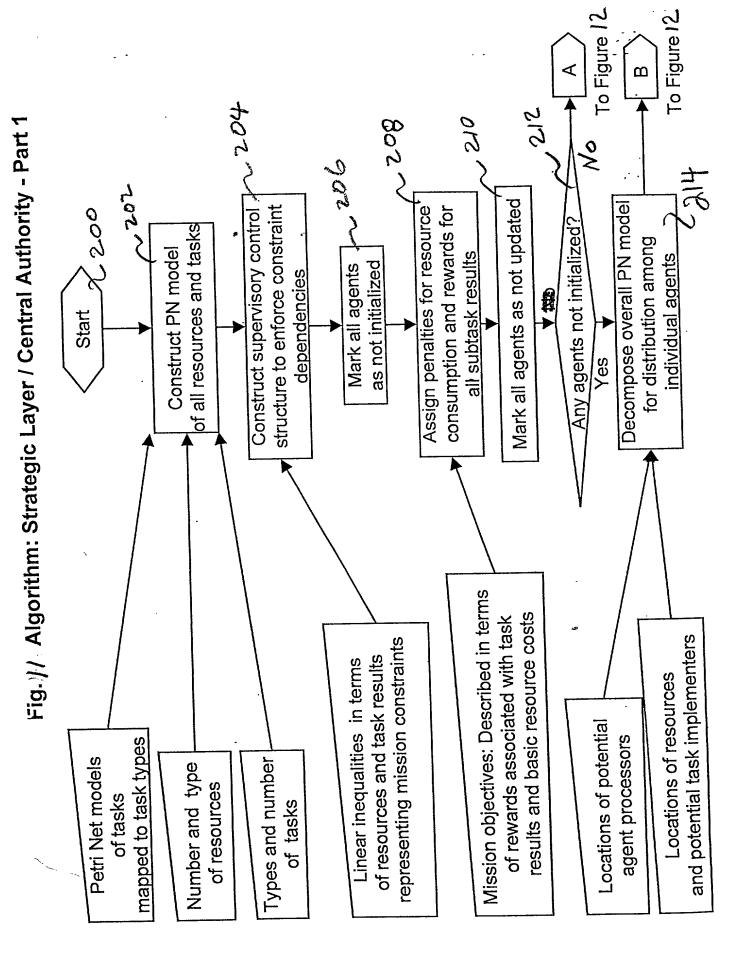
 Task and resource mappings Revised task and resource Resource Usage Cost and Task Completion Reward Agent Initial Conditions Number and type of PN initial conditions User feedback 105 PN structure resources mappings G I **Authority** と し く し ろ Central O Ш  $\mathbf{\omega}$  Petri net (PN) task components Location of task implementers Completed tasks with relative Dynamic updates from agents components and PN modules Modular task representations Number and types of task Mapping between task Local connections and 50 Remaining resources Location of resources Number and types of Linear inequalities Mission constraints Mission objectives Initial conditions value assigned dependencies Task status capabilities resources

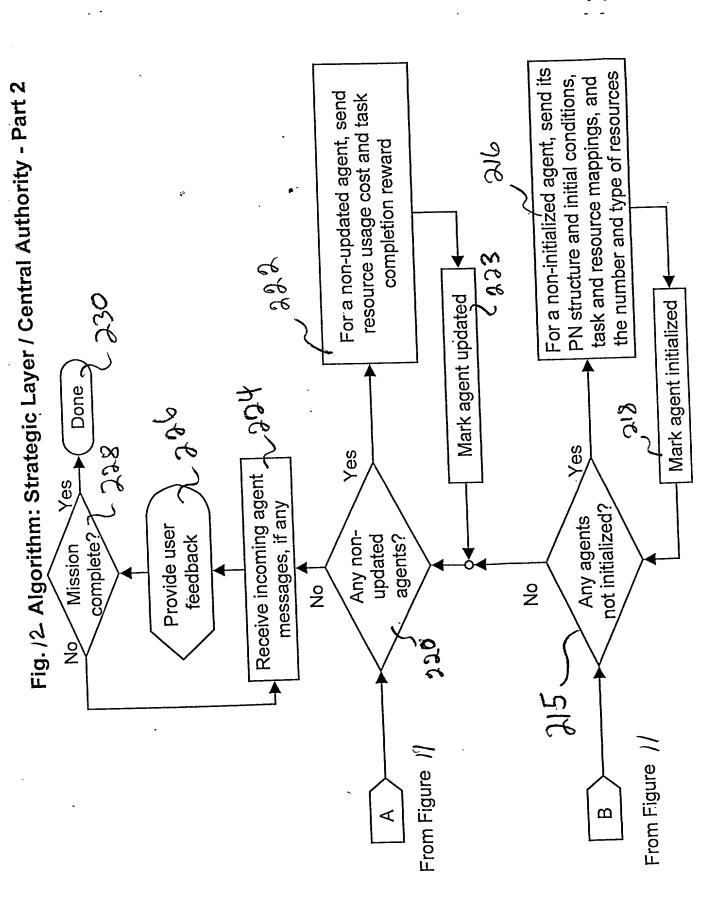
Fig. eta Strategic Layer / Central Authority - Inputs and Outputs



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Fig. 10 Interconnections of Central Authority and Autonomous Agents Δ. Q 0 Agent n Agent 1 とこりと HG-1 ග Щ I **Authority** Central





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From Figure 14 To Figure 14 Ω 300 S 2 욷 Yes avoidance structures Yes Calculate deadlock dependency links Setup internal PN link messages? Outgoing agent representation data received? received? Cost data Initialization Incoming Start 305 PN structure, PN initial conditions, Number and type of resources Task and resource mappings, Setup from central authority: resource usage cost and task Update from central authority: completion reward dependency links Incoming agent

Fig. 13 Algorithm: Tactical Layer / Autonomous Agents - Part 1

